

WHAT IS CLAIMED IS:

1. A method for making laminated veneer lumber (LVL) from a plurality of wood veneers, said method comprising:
  - (a) applying an adhesive onto a mating surface of at least one of said wood veneers, wherein said adhesive comprises:
    - i) a thermosetting phenol-aldehyde resin having at least one of (A) a number average molecular weight ( $M_n$ ) of at least about 450, (B) a weight average molecular weight ( $M_w$ ) of at least about 2000, and (C) a Z-average molecular weight ( $M_z$ ) of at least about 6000, wherein said  $M_n$ ,  $M_w$ , and  $M_z$  are measured using gel permeation chromatography (GPC); and
    - ii) a ketone-aldehyde resin cure promoter, and
  - (b) forming LVL from said wood veneers,wherein at least one of said veneers has a moisture content of less than about 7% by weight or said plurality of wood veneers has an average moisture content of less than about 10% by weight.
2. The method of claim 1, wherein step (b) comprises:
  - (i) pre-pressing said wood veneers, having said mating surface to which said adhesive has been applied, under pre-pressing conditions to form a panel, and,
  - (ii) hot-pressing said panel at curing conditions to cure said adhesive.
3. The method of claim 1, wherein said plurality of wood veneers has an average moisture content from about 3% to about 7% by weight.

4. The method of claim 1, wherein said thermosetting phenol-aldehyde resin is prepared from a mixture having a phenol:aldehyde mole ratio from about 0.38:1 to about 0.53:1.
5. The method of claim 2, wherein, in step (b), said hot-pressing is conducted at least about 30 minutes after said pre-pressing.
6. The method of claim 2, wherein said pre-pressing conditions include a pressure from about 150 psig to about 175 psig.
7. The method of claim 2, wherein said curing conditions include a temperature from about 285°F to about 345°F and a pressure from about 190 psig to about 350 psig.
8. The method of claim 1, wherein said thermosetting phenol-aldehyde resin is a phenol-formaldehyde resin.
9. The method of claim 1, wherein said ketone-aldehyde resin cure promoter is an acetone-formaldehyde resin cure promoter.
10. The method of claim 1, wherein said applying step (a) comprises curtain coating said phenol-aldehyde resin onto said mating surface and thereafter spraying said ketone-aldehyde resin cure promoter onto said phenol-aldehyde resin.
11. The method of claim 1 wherein said ketone-aldehyde resin cure promoter is present in an amount from about 1% to about 20% by weight of the combined amount of phenol-aldehyde resin and ketone-aldehyde resin cure promoter.

12. The method of claim 1, wherein said LVL comprises at least 13 wood veneers.

13. An adhesive composition comprising:

(a) a thermosetting phenol-aldehyde resin having at least one of (A) a number average molecular weight ( $M_n$ ) of at least about 450, (B) a weight average molecular weight ( $M_w$ ) of at least about 2000, and (C) a Z-average molecular weight ( $M_z$ ) of at least about 6000, wherein said  $M_n$ ,  $M_w$ , and  $M_z$  are measured using gel permeation chromatography (GPC);

(b) a ketone-aldehyde resin cure promoter, and

(c) a soya compound having a protein level of at least about 50% by weight,

wherein said adhesive composition reaches a viscosity of 3000 centipoise at a temperature of 77°F, in a time of less than about 20 minutes after the initial mixing of (a), (b), and (c).

14. The adhesive composition of claim 13, wherein said soya compound is a soy protein concentrate having a protein level of at least about 70% by weight.

15. A method for making laminated veneer lumber (LVL) from a plurality of wood veneers, said method comprising:

(a) applying the adhesive composition of claim 13 onto a mating surface of at least one of said wood veneers, and

(b) forming LVL from said wood veneers,

wherein said LVL comprises from 13 to 29 wood veneers.

16. The method of claim 15, wherein said thermosetting phenol-aldehyde resin, said ketone-aldehyde resin cure promoter, and said soya compound are mixed continuously prior to or during said applying step (a), in proportions that depend on at least one of a measured veneer moisture level and a measured veneer temperature.
17. An adhesive composition comprising:
- (a) a thermosetting phenol-aldehyde resin having at least one of (A) a number average molecular weight ( $M_n$ ) of at least about 450, (B) a weight average molecular weight ( $M_w$ ) of at least about 2000, and (C) a Z-average molecular weight ( $M_z$ ) of at least about 6000, wherein said  $M_n$ ,  $M_w$ , and  $M_z$  are measured using gel permeation chromatography (GPC); and
  - (b) a ketone-aldehyde resin cure promoter, and
  - (c) a catalyst selected from the group consisting of an acetate, a carbamate, an ester, a lactone, and a carbonate.
18. A method for making laminated veneer lumber (LVL) from a plurality of wood veneers, said method comprising:
- (a) applying the adhesive composition of claim 17 onto a mating surface of at least one of said wood veneers, and
  - (b) forming LVL from said wood veneers,

wherein at least one of said veneers has a moisture content of greater than about 15% by weight or said plurality of wood veneers has an average moisture content of greater than about 10% by weight.

19. The method of claim 18, wherein said catalyst is triacetin that is present in an amount from about 1% to about 3% by weight of said adhesive composition.
20. The method of claim 18, wherein said thermosetting phenol-aldehyde resin, said ketone-aldehyde resin cure promoter, and said catalyst are mixed continuously prior to or during said applying step (a), in proportions that depend on at least one of a measured veneer moisture level and a measured veneer temperature.